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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,001	03/11/2004	Hideshi Hattori	CU-3633	6288
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EXAMINER				
JUNG, UNSU				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/798,001

**Applicant(s)**

HATTORI, HIDESHI

**Examiner**

Unsu Jung

**Art Unit**

1641

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-25 is/are pending in the application.
- 4a) Of the above claim(s) 22-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on October 30, 2007 and December 7, 2007 has been entered. The submission filed on December 7, 2007 includes amendments to claims 13-15.

It is further noted that the status identifiers for claims 19-21 are incorrect. Claims 19-21 in the Listing of Claims in the reply filed on December 7, 2007 indicates as being "currently amended." However, claims 19-21 do not include any amendments in the reply filed on December 7, 2007. Therefore, the status identifiers for claims 19-21 should be corrected to "previously presented."

2. Claims 13-25 are pending, claims 22-25 have been withdrawn from consideration, and claims 13-21 are currently under consideration for merits.

### ***Rejections Withdrawn***

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3. The following rejections have been withdrawn in view of amended claims 13-15 in the reply filed on December 7, 2007:

- Rejection of claims 13-15 and 19-21 under 35 U.S.C. 103(a) as being unpatentable over Giaever (U.S. Patent No. 3,979,184, Sept. 7, 1976) in view of McGall et al (U.S. Patent No. 5,412,087, May 2, 1995), and in light of Arnold (U.S. Patent No 3,982,908, Sept. 28, 1976); and
- Rejection of claims 16-18 under 35 U.S.C. 103(a) as being unpatentable over Giaever U.S. Patent No. 3,979,184, Sept. 7, 1976) in view of McGall et al (U.S. Patent No. 5,412,087, May 2, 1995) as applied to claims 13-15 above, and further in view of Noblett (U.S. Patent No. 6,362,004 B1, Mar. 26, 2002).

#### ***Specification***

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the abstract contains two paragraphs. According to MPEP § 608.01(b), the abstract should be generally limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 13-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13-15 and all dependent claims thereof lack transitional phrase (i.e. comprising, consisting, consisting essentially of, etc.) necessary to determine a structural limitation that is actually part of the claimed invention. According to MPEP § 2111.03, the transitional phrases “comprising”, “consisting essentially of” and “consisting of” define the scope of a claim with respect to what unrecited additional components or steps, if any, are excluded from the scope of the claim. Since the claims lack transitional phrase, it is unclear what constitutes a structural limitation that is actually part of the claimed invention. Therefore, claims 13-15 and all dependent claims fail to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 13-15 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Glazier (WO 00/61282, Oct. 19, 2000) and as evidenced by Minemura et al. (U.S. Patent No. 5,583,840, Dec. 10, 1996) (hereinafter "Minemura").

Glazier anticipates instant claims by teach a substrate (support region, see entire document, particularly, pp2-3 and p8, lines 19-23) for bio-microarray, wherein:

- anti-reflection layer (porous region comprising colloidal silica particles, p3) is formed on the surface of the substrate, the anti-reflection layer has a fine uneven structure comprising a fine particle of diameter in a range of 7-100 nm (p3, lines 21-22); and
- an immobilization layer (linker molecules, p26, line 17-27, line 28) for immobilizing a probe molecule is formed in a pattern on the anti-reflection layer.

With respect to the "anti-reflection layer," Glazier teaches a porous region comprising colloidal silica particles (p3), which would inherently possess anti-reflection property as the current specification discloses that anti-reflection layer can include variety of particles include SiO<sub>2</sub> particles.

With respect to the limitation of "a bulk refractive index of the fine particle is smaller than that of the substrate," Glazier further teaches that the substrate can be selected from variety of materials including plastic (p8, lines 19-20). Although Glazier does not specifically disclose that the bulk refractive index of silica particles is smaller than the plastic substrate, the current specification discloses that bulk refractive index of silica ( $\text{SiO}_2$ ) is 1.46 (p15, 4<sup>th</sup> paragraph) and Minemura teaches that plastic has a refractive index of about 1.5. Therefore, the bulk refractive index of the silica particle of Glazier is inherently smaller than that of the plastic substrate.

With respect to claims 14 and 15, Glazier teaches that the anti-reflection layer has a fine uneven/porous structure (porous layer) with a depth in a range of 10 nm to 70  $\mu\text{m}$  (p3, lines 1-4).

With respect to claims 19-21, Glazier teaches a bio-microarray, comprising the substrate as set forth above and a biomolecule immobilized on the substrate (p13, line 21-p14, line 14).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glazier (WO 00/61282, Oct. 19, 2000) and as evidenced by Minemura et al. (U.S. Patent No. 5,583,840, Dec. 10, 1996) (hereinafter "Minemura") and further in view of Noblett (U.S. Patent No. 6,362,004 B1, Mar. 26, 2002).

Glazier as evidenced by Minemura has been disclosed as set forth in item 8 above. However, Glazier as evidenced by Minemura fails to teach a mark formed on the substrate for positional detection.

Noblett reference teaches fiducial marks located on predetermined locations with respect to a microarray sample, in order to position and align the sample with greater precision for detection purposes (see entire document, particularly abstract and column 3, lines 24-35).

It would have been obvious to one of ordinary skill in the art to modify the apparatus of Glazier as evidenced by Minemura with fiducial marks located on predetermined locations with respect to the probe array, as taught by Noblett, in order to position and align a sample with greater precision for detection purposes. The



advantage of more accurate detection, as taught by Noblett, provides the motivation to combine teachings of Noblett with Glazier as evidenced by Minemura. In addition, one of ordinary skill in the art at the time of the invention would have had reasonable expectation of success in including the fiducial marks, as taught by Noblett, in the apparatus of Glazier as evidenced by Minemura, since Glazier teaches an array of predefined or known regions of polymers (see Glazier, p13, lines 27-28), and the fiducial marks of Noblett provides a means to correctly locate the immobilized polymers.

### ***Response to Arguments***

12. Applicant's arguments with respect to claims 15-21 have been considered but are moot in view of the new ground(s) of rejection.

13. Since the prior art fulfills all the limitations currently recited in the claims, the invention as currently recited would read upon the prior art.

### ***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inomata et al. (U.S. PG Pub. No. US 2003/0109062 A1, June 12, 2003) teaches a reactive solid support having a porous substrate and probe biomolecule fixed on the surface of the solid support having porosity (see entire document, particularly Abstract and p6, paragraph [0099]).

15. No claims are allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is (571)272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Unsu Jung/  
Unsu Jung, Ph.D.  
Patent Examiner

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